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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.         | CONFIRMATION NO. |
|--|-------------|----------------------|-----------------------------|------------------|
| 09/883,391   | 06/19/2001  | Takayuki Kifuku      | Q64978                      | 1332             |
| 7590 04/22/2004<br>SUGHRUE, MION, ZINN, MACPEAK & SEAS<br>2100 Pennsylvania Avenue, N.W.<br>Washington, DC 20037 |             |                      | EXAMINER<br>SMITH, TYRONE W |                  |
|  |             |                      | ART UNIT<br>2837            | PAPER NUMBER     |

DATE MAILED: 04/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                               |  |  |
|------------------------------|-------------------------------|--|--|
| <b>Office Action Summary</b> | Application No.<br>09/883,391 | Applicant(s)<br>KIFUKU ET AL.  |  |
|                              | Examiner<br>Tyrone W Smith    | Art Unit<br>2837   |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 April 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 11-20 is/are rejected.
- 7) ☒ Claim(s) 9 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### **Claim Rejections - 35 USC § 102**

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3 and 1 1-20 rejected under 35 U.S.C. 102(b) as being anticipated by Iwashita (5467001).

Regarding Claims 1-3 and 1 1-20. Iwashita discloses a control method for alternating current motor, which includes a drive circuit (Figure 3 #8) for driving the motor (Figure 3 #9) and a motor control apparatus for control the drive circuit. The motor controller limits a motor current by providing a motor current limit value (refer to Figure 4 steps S1-S10 item Ko) that is integrated with a value of the predetermined function of the phase current of the motor (refer to Figure 4 steps S1-S10 item 10). Limiting the target value of the target value of the phase current in accordance with the motor current limit value (column 5 lines 1 1-67, column 6 lines 1-41 and column 7 lines 43-60).

### **Claim Rejections - 35 USC § 103**

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4-8 rejected under 35 U.S.C. 103(a) as being unpatentable over Iwashita (5467001) in view of Mori (JP 06-225573).

Regarding Claims 4-8, Iwashita discloses a control method for alternating current motor, which includes a drive circuit (Figure 3 #8) for driving the motor (Figure 3 #9) and a motor control apparatus for control the drive circuit. The motor controller limits a motor current by providing a motor current limit value (refer to Figure 4 steps S1-S10 item Ko) that is an integrated with value of the predetermined function of the phase current of the motor (refer to Figure 4 steps S1-S10 item 10). Limiting the target value of the target value of the phase current in accordance with the motor current limit value (column 5 lines 1 1-67, column 6 lines 1-41 and column 7 lines 43-60). However, Iwashita does not disclose the micro controller limiting the d and q axial current by vector synthesizing.

Mori discloses a vector controller for an Induction Motor, which includes a PWM inverter/driver (Figure 3 #2) for the motor; a micro-controller which limits a motor current (d and q axial by vector synthesizing) in accordance with an integrated value of a predetermined function of a phase current. The micro-controller for Mori's invention, as illustrated in Figure 9, analog-digital converters (7), current control section (6), coordinate transformation section (9 and 10), transducer (8) and an integrator (5). Also, refer to Figure 6 where the current control section includes limiter circuits (6e and 6f), PI controller (6a and 6c) and interference term compensation means (6c and 6d).

It would have been obvious to one of ordinary skill in the art at the time of invention to use Iwashita's a control method for alternating current motor with Mori's a vector controller for an Induction Motor. The advantage of combining the two would assure a vector control state

even if the DC voltage of a PWM inverter were lowered in order to vector control a motor by the inverter having a current control system.

### **Claim Objections**

5. Claims 9 and 10 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### **Response to Arguments/Amendment**

6. Applicant's arguments filed April 12, 2004 have been fully considered but they are not persuasive.

Applicant argues that Iwashita does not disclose a method for protections against overheat using a motor current limit value calculating section and motor current limit section. Further, that Iwashita control of torque command is limited based on limit value. Examiner takes arguments and concerns in full consideration.

Examiner believes that Iwashita teaches the methods as disclosed in the claims, which is based on the claims as presented. Iwashita, refer to Figure 4, the motor controller limits a motor current by providing a motor current limit value (refer to steps S1-S10 item Ko) that is an integrated value of the predetermined function of the phase current of the motor (refer to steps S1-S10 item 10). Further, limiting the target value of the target value of the phase current in accordance with the motor current limit value. Again, Examiner's rejection is based on the claims as presented and the methods used for overheat protection is used in Iwashita. Iwashita invention prevents the maximum current from exceeding a limit value when the motor is decelerating, in other words overcurrent or overheat protection. Examiner suggest that the

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Applicant refer to column 2 lines 59-63, column 5 lines 1 1-67, column 6 lines 1-41 and column 7 lines 43-60. Rejection is maintained based on 35 U.S.C. 102 and 103.

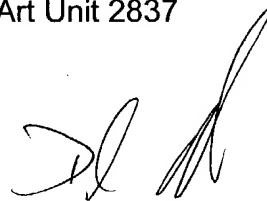
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tyrone W Smith whose telephone number is 571-272-2075. The examiner can normally be reached on weekdays from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin, can be reached on 571-272-2800 ext. 37. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tyrone Smith  
Patent Examiner

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A handwritten signature in black ink, appearing to read 'DM', is written over a horizontal line.

**DAVID MARTIN**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**